II. PROJECT REQUIREMENTS

A. Scope of Project

The City of Manchester is seeking an extremely reliable and easy to use High Availability (HA) solution for it's IBM iSeries computer systems that can replicate, real-time, the entire system. The preferred solution should fully utilize IBM's remote journaling and clustering technologies.

One of the main goals of the City of Manchester is to provide 99.9999% uptime on the iSeries. Some of the ways in which we hope to accomplish this are:

- Do saves and backups with absolutely no user downtime without leaving the production system unprotected by continuing to send all of the transactions over to the backup system during the save.
- Do operating system upgrades with negligible user downtime by rolling to the backup environment.
- Do hardware upgrades on the production system without downtime by rolling to the backup.
- If the production system fails, switch over to the backup within seconds.

B. Current Environment

The primary production platform consists of an IBM iSeries model 9406-810 2466 with 2 GB of memory. The backup system, at a remote location, is a 9406-270 2432 with 1 GB of memory. Both systems are currently running under operating system OS/400, at level V5R2. The two systems are connected via fiber on an Ethernet network. The production system has two Gigabit Ethernet cards and the backup system has one Gigabit Ethernet card.

III. TECHNICAL SPECIFICATIONS

Please provide answers to the following questions.

A. Data Flow Between Primary and Backup Systems

1. Does your product replicate the entire system, real-time, all object types? Provide a detailed explanation as to how this is achieved. Are these recent product innovations or have they been part of the product for more than one year?
    a. Large Object Support?
    b. All or part of the IFS? Replicate directories that are not part of the "root"?
    c. User Profiles & Passwords?
    d. Data queues & data queue contents?
    e. Output queues & output queue contents?

f. Data Areas?

g. Job Scheduler?

h. Job Queues?

i. Configurations?

2. Does the product provide support for the following Advanced OS/400 Operations:

   a. Remote Journaling?

   b. Journal minimized changes?

   c. Reuse deleted records?

   d. LPAR support?

   e. Clustering (CRS)?

3. Can all libraries in QSYS.lib be replicated, if not, which ones are not?

4. Can you support synchronous as well as asynchronous replication?

5. Can/how do you support primary/backup systems at different OS level/HA level?

6. The City is looking for a solution to provide us the opportunity to provide 7 x 24 access to information. Will this product provide needed capabilities?

7. Once switched to the backup (Backup) system and user updates are made on that system (Backup), will we have the ability to move the updated data back to the originating (Primary) system, once interruption is over? Can the solution move data in both directions?

B. <u>Journaling Considerations</u>

1. Does your product provide support for the following capabilities/features:

   a. SMAPP (System Managed Access Path Protection)?

   b. Multiple journals, number of journals/receivers?

   c. Before/after images?

2. As journaling is invoked for your product, what type of performance impact can we expect to see on our DASD, CPU utilization, subsystems, memory pools or other system resource on both the primary and backup system?

3. Does all communication between primary/backup occur via remote journaling or are there other communication channels?

4. Can you elaborate on the impact journaling will have on batch and interactive processes? For example, will nightly batch runs increase X%?

5. If journaling is interrupted, how does your product handle this to insure data integrity when information is being replicated from one system to another?

6. How does your product work with exclusive locks on objects and use of commitment control?
7. What harvesting activities are performed on the primary system?
8. What are the components of the HA software and what lives on the primary/backup?

C. Synchronization

1. What characteristics are used to determine "out of sync"?
2. How do you validate synchronization?
3. Can new objects in QSYS.lib and the IFS be auto-synched?
4. What tools are in place to monitor ability to switch over readiness?
5. What daily maintenance activities must/should be performed to insure integrity of both the primary/backup systems? How long does this process take?
6. What factors impact the time required to failover?
7. Does the software provide for both switch over and switch back capability? If so please explain the process.
8. Can the system handle the reorganization of a data base file?
9. How does the system handle the creation of new libraries and files and the movement of a file from one library to another?
10. Does the primary system need to indicate or is it able to indicate in the journal a quiet point to provide a consistent point to suspend replication on the backup and begin the backup process on the backup?

D. Network Switching Hardware / Configurations

1. We are connected between primary and backup systems via fiber using Gigabit Ethernet. Are there any special WAN configurations that your product requires?
2. Based on our environment and your product, what is the recommended bandwidth for the network between the primary and backup system?
3. What special network/communication hardware would be required for switching users over from a primary to a backup system? For connectivity, the City uses PC's with either Seagull GUI/400 or iSeries Access for Windows connecting via TCP/IP. Later this year, the City will be implementing a browser based solution, using JACADA software, for access to the iSeries. For printing, the City uses iSeries *LAN configured printers using TCP/IP.
4. What would be the required time it takes to switch our users over from a primary to a backup system?
5. How are triggers, referential integrity and stored procedures supported on primary/backup?

E. Modifications to our Environment

1. Are there any changes required for CL's or programs in our applications to effectively utilize high availability from your product?
2. What system configuration would be needed for either our primary or backup systems to support your product?
3. Are there any specific system values that need to be changed or particular PTF's required to support your product?
4. Are there any network configuration changes on the iSeries systems, WAN or LAN needed to support high availability with your product?

F. Ease of Use and Technical Support

1. Is your product user friendly for administering the product, as well as making the switch between systems?
2. What would you estimate to be the length of time it will take to install and implement your product?
3. In the same view on one display, will your product show status and administration functions (i.e. messages/alerts, available options, etc.) of the system pair, or pairs (in an LPAR, and/or multi-operating system platform) for our environment?
4. Does your company provide 7 x 24 service for technical support issues? Is it part of your normal maintenance fee or an additional cost for premium service?
5. What can we expect in turn around time for support, from when the call was placed until you're technical support responds back to us?
6. How are failovers implemented, what criteria can be evaluated to invoke an automatic failover?

G. Training / Education

1. Is there formal training for your product offsite and, if so, what is the recommended period of time?
2. Is the training informal on-site and for how long?

H. Miscellaneous

1. What sizing tools are available?
2. How is the product licensed - IBM Tier, processor, cluster, LPAR, Primary/Backup, site?

I. Vendor Information

1. Detail your company's relationship with IBM in general, and IBM development in Rochester, MN, in particular.
2. Can you provide a brief company description and background?
3. Does your company have an active user group?
4. Does your company have any key partnerships or third parties?
5. Has your company been acquired or acquired any business in the last five years?
6. How much annual revenue is invested in R&D?
7. Please provide the active clients that you have and the market area they are in.
8. Provide your most recent financial statement or Dun & Bradstreet report.